

148527-1

IN THE SPECIFICATION**BEST AVAILABLE COPY**

Please amend Paragraph [0059] as follows:

[0059] In one embodiment, the authentication system comprises three optically filtered light sensing devices (e.g., optically filtered photodiodes) that optionally allow for RGB color determination. These optically filtered light sensing devices are capable of detecting analog emission intensity in a spectral sensitivity range with each light sensing device having a different device spectral sensitivity range which includes at least a portion of (and is preferably within) the visible multi-wavelength spectral distribution of one of the light sources. Additionally, the device spectral sensitivity range of at least one (preferably at least two, and more preferably at least three) of the light sensing devices is disposed in at least a portion of the photoluminescent emission wavelength range of the optical identifier (e.g., the luminescent tag). In other words, if the optical identifier photoluminescent emission wavelength range is 400 nm to 500 nm, the first light sensing device can have a spectral sensitivity range of 380 nm to 425 nm, the second light sensing device can have a spectral sensitivity range of 450 nm to 480 nm, and the third light sensing device can have a spectral sensitivity range of 475 nm to 510 nm. In an alternative exemplary system, if the optical identifier photoluminescent emission wavelength range is 400 nm to 500 nm, the first light sensing device can have a spectral sensitivity range of 400 nm to 425 nm, the second light sensing device can have a spectral sensitivity range of 435 nm to 455 nm, and the third light sensing device can have a spectral sensitivity range of 475 nm to 510 nm. In yet another embodiment where the optical identifier photoluminescent emission wavelength range is 400 nm to 500 nm, with a peak emission wavelength of 475 nm, the first light sensing device can have a spectral sensitivity range of 400 nm to 425 nm, the second light sensing device can have a spectral sensitivity range of 435 nm to 455 nm, and the third light sensing device can have a spectral sensitivity range of 460 nm to 475 nm. Optionally, additional light sensing device(s) having a spectral sensitivity range greater than the peak emission wavelength can also be employed. In other words, a first photodiode can have a first peak in a first wavelength range where the photoluminescent emission is at 10% to 70% of a maximum photoluminescence intensity, a second photodiode can have a second peak in a second wavelength range where the photoluminescent emission is at 10% to 70% of the maximum photoluminescence intensity, and a third photodiode has a third peak in a third wavelength range where the photoluminescent emission is at 70% to 100% of the maximum photoluminescence intensity.

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Please amend Paragraph [0062]

[0062] The spectral sensitivity range of each of the various light sensing devices is desirably different (although redundancy in the system is also contemplated). One or more of the light sensing devices can have a narrow device spectral sensitivity bandwidth (i.e., less than or equal to 60 nm); for example, 5 nm to 60 nm, or peak  $\pm$  less than or equal to 30 nm. Specifically, a combination of the light sensing devices desirably covers the wavelengths of 360 nm to 780 nm, with coverage of the wavelengths of 380 nm to 750 nm acceptable, and coverage of 400 nm to 700 nm more practical while allowing good color determination. For example, a photodiode can have a spectral sensitivity range and have a peak that corresponds to a shortest wavelength of the desired photoluminescent emission wavelength range  $\pm 5$  nm, and another photodiode can have a spectral sensitivity range and have a peak that corresponds to a longest wavelength of the desired photoluminescent emission wavelength range  $\pm 5$  nm.

Please amend Paragraph [0064] as follows:

[0064] An additional, filtered photodiode may be employed having a fourth peak spectral sensitivity wavelength corresponding to a wavelength at which the photoluminescent emission band has an intensity of less than or equal to about 1% of its peak intensity. For example, the fourth peak spectral wavelength can be a wavelength of less than or equal to  $\pm 15$  nm of a wavelength where the emission intensity of the luminescent tag became zero (i.e., is no longer detectable). In another example, a photodiode can have a spectral sensitivity range and have a peak that is within 100 nm of a longest wavelength at which the desired photoluminescent emission wavelength range has an intensity of less than 1% of a maximum desired photoluminescence intensity.

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Please amend the Abstract as follows:

An authentication system may comprise: a first light source, a second light source, and at least three optically filtered light sensing devices ~~for detecting analog emission intensity in a spectral sensitivity range, wherein each light sensing device is in operable communication with the first light source and/or the second light source.~~ The first light source can have a first light source spectral distribution and can be capable of providing sufficient excitation to produce a photoluminescent emission from a medium comprising a luminescent tag and a color. The second light source can have a visible multi-wavelength spectral distribution and can be capable of providing sufficient visible multi-wavelength illumination of the medium to generate a second analog response, ~~wherein the second analog response is different from the photoluminescent emission.~~ Each light sensing device can have a different device spectral sensitivity range ~~which includes at least a portion of the visible multi-wavelength spectral distribution, with the device spectral sensitivity range of at least one of the light sensing devices including at least a portion of a desired photoluminescent emission wavelength range.~~